

IN THE CLAIMS:

Please CANCEL claims 73-76 without prejudice to or disclaimer of the recited subject matter.

Please AMEND claims 11, 20, 34-42 and 72, and ADD new claim 77, as follows. Note that all the claims currently pending in this application, including those not currently being amended, have been reproduced below for the Examiner's convenience.

1. (Previously Cancelled)

2. (Previously Amended) A substrate attracting and holding method, comprising the steps of:

supporting a substrate by use of a protrusion provided on a holding table for holding the substrate, wherein the protrusion is disposed to be placed in a predetermined positional relation, with respect to a direction along the surface of the substrate, with (i) a position of an alignment mark to be used for processing the substrate or (ii) a position with respect to which an alignment mark is to be produced; and

attracting and holding the substrate,

wherein the substrate is supported so that the position of the alignment mark or the position with respect to which the alignment mark is to be produced is placed above the protrusion.

3. (Previously Amended) A substrate attracting and holding method, comprising the steps of:

supporting a substrate by use of a protrusion provided on a holding table for holding the substrate, wherein the protrusion is disposed to be placed in a predetermined positional relation, with respect to a direction along the surface of the substrate, with (i) a position of an alignment mark to be used for processing the substrate or (ii) a position with respect to which an alignment mark is to be produced; and

attracting and holding the substrate,

wherein the substrate is supported so that the position of the alignment mark or the position with respect to which the alignment mark is to be produced is placed at a central portion in relation to disposition of the protrusion.

4. (Previously Cancelled)

5. (Original) A substrate attracting and holding method, comprising the steps of:

supporting a substrate by use of a protrusion provided on a holding table for holding the substrate, wherein the protrusion is disposed to be placed in a predetermined positional relation, with respect to a direction along the surface of the substrate, with (i) a position of an alignment mark to be used for processing the substrate or (ii) a position with respect to which an alignment mark is to be produced; and

attracting and holding the substrate,

wherein the substrate is supported so that the protrusion is placed at the same position with reference to the position of the alignment mark or the position with respect to which the alignment mark is to be produced.

6. (Previously Cancelled)

7. (Previously Amended) A substrate attracting and holding method, comprising the steps of:

supporting a substrate by use of a protrusion provided on a holding table for holding the substrate, wherein the protrusion is disposed to be placed in a predetermined positional relation, with respect to a direction along the surface of the substrate, with (i) a position of an alignment mark to be used for processing the substrate or (ii) a position with respect to which an alignment mark is to be produced; and

attracting and holding the substrate,

wherein at least a portion of the protrusion surrounds a zone corresponding to the position of the alignment mark or the position with respect to which the alignment mark is to be produced.

8-10. (Previously Cancelled)

11. (Currently Amended) A substrate attracting and holding method, comprising the steps of:

supporting a substrate by use of a protrusion provided on a holding table for holding the substrate, wherein the protrusion is disposed to be placed in a predetermined positional relation, with respect to a direction along the surface of the substrate, with (i) a position of an alignment mark to be used for processing the substrate or (ii) a position with respect to which an alignment mark is to be produced; and

attracting and holding the substrate,

wherein at least a portion of the protrusion surrounds a zone corresponding to the position of the alignment mark ~~of~~ or the position with respect to which the alignment mark is to be produced, and further comprising adjusting the pressure of air between the holding table and the substrate in a region as surrounded by the protrusion.

12-14. (Previously Cancelled)

15. (Previously Amended) A substrate attracting and holding system, comprising:

a holding table for holding a substrate; and

a protrusion provided on said holding table, said protrusion being disposed to be placed in a predetermined positional relationship, with respect to a direction along the surface of the substrate, with (i) a position of an alignment mark to be used for processing the substrate or (ii) a position with respect to which an alignment mark is to be produced,

wherein the protrusion is disposed so that the position of the alignment mark or the position with respect to which the alignment mark is to be produced is placed above the protrusion.

16. (Previously Amended) A substrate attracting and holding system, comprising:

a holding table for holding a substrate; and

a protrusion provided on said holding table, said protrusion being disposed to be placed in a predetermined positional relationship, with respect to a direction along the surface of the substrate, with (i) a position of an alignment mark to be used for processing the substrate or (ii) a position with respect to which an alignment mark is to be produced,

wherein the protrusion is disposed so that the position of the alignment mark or the position with respect to which the alignment mark is to be produced is placed at a central portion in relation to disposition of the protrusion.

17. (Previously Cancelled)

18. (Previously Amended) A substrate attracting and holding system, comprising:

a holding table for holding a substrate; and

a protrusion provided on said holding table, said protrusion being disposed to be placed in a predetermined positional relationship, with respect to a direction along the surface of

the substrate, with (i) a position of an alignment mark to be used for processing the substrate or
(ii) a position with respect to which an alignment mark is to be produced,

wherein the protrusion is provided so that the protrusion is placed at the same
position with reference to the position of the alignment mark or the position with respect to
which the alignment mark is to be produced.

19. (Previously Cancelled)

20. (Currently Amended) A substrate attracting and holding system, comprising:

a holding table for holding a substrate; and

a protrusion provided on said holding table, said protrusion being disposed to be
placed in a predetermined positional relationship, with respect to a direction along the surface of
the substrate, with (i) a position of an alignment mark to be used for processing the substrate or
(ii) a position with respect to which an alignment mark is to be produced,

wherein at least a portion of the protrusion is disposed to surround a zone
corresponding to the position of the alignment mark ~~of~~ or the position with respect to which the
alignment mark is to be produced.

21-24. (Previously Cancelled)

25. (Previously Amended) A substrate attracting and holding system, comprising:

a holding table for holding a substrate; and

a protrusion provided on said holding table, said protrusion being disposed to be placed in a predetermined positional relationship, with respect to a direction along the surface of the substrate, with (i) a position of an alignment mark to be used for processing the substrate or (ii) a position with respect to which an alignment mark is to be produced,

wherein at least a portion of the protrusion is disposed to surround a zone corresponding to the position of the alignment mark or the position with respect to which the alignment mark is to be produced, and said system further comprises a pressure adjusting mechanism for adjusting pressure of air between said holding table and the substrate in a region as surrounded by the protrusion.

26-33. (Previously Cancelled)

34. (Currently Amended) A substrate attracting and holding system comprising:

a plurality of protrusions for supporting a substrate, for attracting and holding the substrate supported on the protrusions, wherein a disposition pitch L of the protrusions and an attraction force P of the substrate are set so as to satisfy a relation:

$$P \cdot L^3 \leq [36 \cdot E \cdot h^2 \cdot dx dy] / [\sqrt{3} \cdot k \cdot c]$$

where $dxdy$ is a distortion tolerance, E is a longitudinal elasticity coefficient, h is a thickness of the substrate, c is a correction coefficient based on the protrusion disposition and k is a neutral plane correction coefficient.

35. (Currently Amended) A substrate attracting and holding system comprising:

a plurality of protrusions for supporting a substrate, for attracting and holding the substrate supported on the protrusions, wherein a disposition pitch L of the protrusions and an attraction force P of the substrate are set so as to satisfy a relation:

$$P \cdot L^3 \leq 0.00427 \text{ (N} \cdot \text{m)}.$$

36. (Currently Amended) A system according to Claim 34 or 35, wherein the disposition pitch L and the substrate attraction force P are set to further satisfy relations:

$$G \cdot h \cdot \rho / \mu \leq P \leq 100000 \text{ (N/m}^2\text{)}$$

$$0.0005 \leq L \leq 0.005 \text{ (m)},$$

wherein h is a thickness of the substrate, ρ is a density of the substrate, μ is a stationary static friction coefficient of the substrate, and G is a maximum acceleration of a stage on which said substrate attracting and holding system is mounted.

37. (Currently Amended) A substrate attracting and holding system comprising:

a plurality of protrusions for supporting a substrate, for attracting and holding the substrate supported on the protrusions, wherein a disposition pitch L of the protrusions and an attraction force P of the substrate are set so as to satisfy relations:

$$P \cdot L^3 \leq 0.00427 \text{ (N} \cdot \text{m)}$$

$$33 \leq P \leq 100000 \text{ (N/m}^2\text{)}, \text{ and}$$

$$0.0005 \leq L \leq 0.005 \text{ (m)}.$$

38. (Currently Amended) A substrate attracting and holding system comprising:

a plurality of protrusions for supporting a substrate, for attracting and holding the substrate supported on the protrusions, wherein the protrusions include an outer peripheral protrusion for supporting an outer peripheral portion of the substrate and a central protrusion for supporting a central portion of the substrate, inside the peripheral portion thereof, ~~and that~~ wherein, when a disposition pitch of the central protrusion is La and an attraction force of the substrate at the central protrusion is Pa while a disposition pitch between the outer peripheral protrusion and a central protrusion juxtaposed inside the outer peripheral protrusion is Lb and an attraction force of the substrate between the outer peripheral protrusion and a central protrusion juxtaposed inside the outer peripheral protrusion is Pb, the disposition pitches Pa and Pb are set so as to satisfy relations:

$$Pa \cdot La^3 \leq [36 \cdot E \cdot h^2 \cdot dx dy] / [\sqrt{3} \cdot k \cdot c]$$

$$Pb \cdot Lb^3 \leq [8 \cdot E \cdot h^2 \cdot dx dy] / [k \cdot c],$$

where $dxdy$ is a distortion tolerance, E is a longitudinal elasticity coefficient, h is a thickness of the substrate, c is a correction coefficient based on the protrusion disposition and k is a neutral plane correction coefficient.

39. (Currently Amended) A substrate attracting and holding system comprising:

a plurality of ~~protrusion~~ protrusions for supporting a substrate, for attracting and holding the substrate supported on the protrusions, wherein the protrusions include an outer peripheral ~~protrusions~~ protrusion for supporting an outer peripheral portion of the substrate and a central protrusion for supporting a central portion of the substrate, inside the peripheral portion thereof, ~~and that wherein~~, when a disposition pitch of the central protrusion is L_a and an attraction force of the substrate at the central protrusion is P_a while a disposition pitch between the outer peripheral protrusion and a central protrusion juxtaposed inside the outer peripheral protrusion is L_b and an attraction force of the substrate between the outer peripheral protrusion and a central protrusion juxtaposed inside the outer peripheral protrusion is P_b , the disposition pitches L_a and L_b and the attraction forces P_a and P_b are set so as to satisfy relations:

$$P_a \cdot L_a^3 \leq 0.00427 \text{ (N} \cdot \text{m)}; \text{ and}$$

$$P_b \cdot L_b^3 \leq 0.00164 \text{ (N} \cdot \text{m)}.$$

40. A substrate attracting and holding system comprising:

a plurality of protrusions for supporting a substrate, for attracting and holding the substrate supported on the protrusions, wherein the protrusions include an outer peripheral

protrusion for supporting an outer peripheral portion of the substrate and a central protrusion for supporting a central portion of the substrate, inside the peripheral portion thereof, ~~and that~~ wherein, when a disposition pitch of the central protrusion is L_a and an attraction force of the substrate at the central protrusion is P_a while a disposition pitch between the outer peripheral protrusion and a central protrusion juxtaposed inside the outer peripheral protrusion is L_b and an attraction force of the substrate between the outer peripheral protrusion and a central protrusion juxtaposed inside the outer peripheral protrusion is P_b , the disposition pitches L_a and L_b and the attraction forces P_a and P_b are set so as to satisfy relations:

$$P_a \cdot L_a^3 \leq 0.00427 \text{ (N} \cdot \text{m)}$$

$$33 \leq P_a \leq 100000 \text{ (N/m}^2\text{)}$$

$$0.0005 \leq L_a \leq 0.005 \text{ (m)}$$

$$P_b \cdot L_b^3 \leq 0.00164 \text{ (N} \cdot \text{m)}$$

$$33 \leq P_b \leq 100000 \text{ (N/m}^2\text{)}; \text{ and}$$

$$0.0005 \leq L_b \leq 0.005 \text{ (m)}.$$

41. (Currently Amended) A substrate attracting and holding system comprising:

a plurality of protrusions for supporting a substrate, for attracting and holding the substrate supported on the protrusions, wherein the protrusions include an outer peripheral protrusion for supporting an outer peripheral portion of the substrate and a central protrusion for supporting a central portion of the substrate, inside the peripheral portion thereof, ~~that~~ wherein a disposition pitch of the central protrusion is made larger than a disposition pitch between the

outer peripheral protrusion and a central protrusion juxtaposed inside the outer peripheral protrusion, and that wherein an attraction force of the substrate at the central protrusion is made smaller than an attraction force of the substrate between the outer peripheral protrusion and a central protrusion juxtaposed inside the outer peripheral protrusion.

42. (Currently Amended) A substrate attracting and holding system comprising:
a plurality of protrusions for supporting a substrate, for attracting and holding the substrate supported on the protrusions, wherein the protrusions include an outer peripheral protrusion for supporting an outer peripheral portion of the substrate and a central protrusion for supporting a central portion of the substrate, inside the peripheral portion thereof, that wherein a disposition pitch of the central protrusion is made not less than a disposition pitch between the outer peripheral protrusion and a central protrusion juxtaposed inside the outer peripheral protrusion, and that wherein an attraction force of the substrate at the central protrusion is made larger than an attraction force of the substrate between the outer peripheral protrusion and a central protrusion juxtaposed inside the outer peripheral protrusion.

43-52. (Previously Cancelled)

53. (Previously Added) An exposure apparatus, comprising:
a substrate attracting and holding system as recited in Claim 34; and

exposure means for transferring, by exposure, a pattern of an original onto a substrate as attracted and held by said substrate attracting and holding system.

54. (Previously Added) A device manufacturing method, characterized by producing a device through manufacturing processes including a process for exposing a substrate by use of an exposure apparatus as recited in Claim 53.

55. (Previously Added) An exposure apparatus, comprising:

a substrate attracting and holding system as recited in Claim 35; and

exposure means for transferring, by exposure, a pattern of an original onto a substrate as attracted and held by said substrate attracting and holding system.

56. (Previously Added) A device manufacturing method, characterized by producing a device through manufacturing processes including a process for exposing a substrate by use of an exposure apparatus as recited in Claim 55.

57. (Previously Added) An exposure apparatus, comprising:

a substrate attracting and holding system as recited in Claim 41; and

exposure means for transferring, by exposure, a pattern of an original onto a substrate as attracted and held by said substrate attracting and holding system.

58. (Previously Added) A device manufacturing method, characterized by producing a device through manufacturing processes including a process for exposing a substrate by use of an exposure apparatus as recited in Claim 57.

59. (Previously Added) An exposure apparatus, comprising:
a substrate attracting and holding system as recited in Claim 42; and
exposure means for transferring, by exposure, a pattern of an original onto a substrate as attracted and held by said substrate attracting and holding system.

60. (Previously Added) A device manufacturing method, characterized by producing a device through manufacturing processes including a process for exposing a substrate by use of an exposure apparatus as recited in Claim 59.

61. (Previously Added) An exposure apparatus, comprising:
a holding table for holding a substrate;
a protrusion provided on said holding table, said protrusion being disposed to be placed in a predetermined positional relationship, with respect to a direction along the surface of the substrate, with (i) a position of an alignment mark to be used for processing the substrate or (ii) a position with respect to which an alignment mark is to be produced; and
exposure means for transferring, by exposure, a pattern of an original onto the substrate as attracted and held by said holding table,

wherein the protrusion is disposed so that the position of the alignment mark or the position with respect to which the alignment mark is to be produced is placed above the protrusion.

62. (Previously Added) An exposure apparatus, comprising:

a holding table for holding a substrate;

a protrusion provided on said holding table, said protrusion being disposed to be placed in a predetermined positional relationship, with respect to a direction along the surface of the substrate, with (i) a position of an alignment mark to be used for processing the substrate or (ii) a position with respect to which an alignment mark is to be produced; and

exposure means for transferring, by exposure, a pattern of an original onto the substrate as attracted and held by said holding table,

wherein the protrusion is disposed so that the position of the alignment mark or the position with respect to which the alignment mark is to be produced is placed at a central position in relation to disposition of the protrusion.

63. (Previously Added) An exposure apparatus, comprising:

a holding table for holding a substrate;

a protrusion provided on said holding table, said protrusion being disposed to be placed in a predetermined positional relationship, with respect to a direction along the surface of

the substrate, with (i) a position of an alignment mark to be used for processing the substrate or (ii) a position with respect to which an alignment mark is to be produced; and

exposure means for transferring, by exposure, a pattern of an original onto the substrate as attracted and held by said holding table,

wherein the protrusion is provided so that the protrusion is placed at the same position with reference to the position of the alignment mark or the position with respect to which the alignment mark is to be produced.

64. (Previously Added) An exposure apparatus, comprising:

a holding table for holding a substrate;

a protrusion provided on said holding table, said protrusion being disposed to be placed in a predetermined positional relationship, with respect to a direction along the surface of the substrate, with (i) a position of an alignment mark to be used for processing the substrate or (ii) a position with respect to which an alignment mark is to be produced; and

exposure means for transferring, by exposure, a pattern of an original onto the substrate as attracted and held by said holding table,

wherein at least a portion of the protrusion is disposed to surround a zone corresponding to the position of the alignment mark or the position with respect to which the alignment mark is to be produced.

65. (Previously Added) A device manufacturing method, comprising the steps of:

supporting a substrate by use of a protrusion provided on a holding table for holding the substrate, wherein the protrusion is disposed to be placed in a predetermined positional relationship, with respect to a direction along the surface of the substrate, with (i) a position of an alignment mark to be used for processing the substrate or (ii) a position with respect to which an alignment mark is to be produced;

reducing pressure between the holding table and the substrate to attract and hold the substrate; and

printing a pattern of an original on the substrate as attracted and held by the holding table,

wherein the protrusion is disposed so that the position of the alignment mark or the position with respect to which the alignment mark is to be produced is placed above the protrusion.

66. (Previously Added) A device manufacturing method, comprising the steps of:

supporting a substrate by use of a protrusion provided on a holding table for holding the substrate, wherein the protrusion is disposed to be placed in a predetermined positional relationship, with respect to a direction along the surface of the substrate, with (i) a position of an alignment mark to be used for processing the substrate or (ii) a position with respect to which an alignment mark is to be produced;

reducing pressure between the holding table and the substrate to attract and hold the substrate; and

printing a pattern of an original on the substrate as attracted by the holding table,

wherein the protrusion is disposed so that the position of the alignment mark or the position with respect to which the alignment mark is to be produced is placed at a central portion in relation to disposition of the protrusion.

67. (Previously Added) A device manufacturing method, comprising the steps of:

supporting a substrate by use of a protrusion provided on a holding table for holding the substrate, wherein the protrusion is disposed to be placed in a predetermined positional relationship, with respect to a direction along the surface of the substrate, and (i) a position of an alignment mark to be used for processing the substrate or (ii) a position with respect to which an alignment mark is to be produced;

reducing pressure between the holding table and the substrate to attract and hold the substrate; and

printing a pattern of an original on the substrate as attracted by the holding table,

wherein the protrusion is provided so that the protrusion is placed at the same position with reference to the position of the alignment mark or the position with respect to which the alignment mark is to be produced.

68. (Previously Added) A device manufacturing method, comprising the steps of:

supporting a substrate by use of a protrusion provided on a holding table for holding the substrate, wherein the protrusion is disposed to be placed in a predetermined positional relationship, with respect to a direction along the surface of the substrate, with (i) a position of an alignment mark to be used for processing the substrate or (ii) a position with respect to which an alignment mark is to be produced;

reducing pressure between the holding table and the substrate to attract and hold the substrate; and

printing a pattern of an original on the substrate as attracted by the holding table, wherein at least a portion of the protrusion is disposed to surround a zone corresponding to the position of the alignment mark or the position with respect to which the alignment mark is to be produced.

69. (Previously Added) A conveying system, comprising:

a cassette for accommodating therein a plurality of chucks being different with respect to disposition of protrusions for supporting a substrate;

a conveyance robot for conveying an arbitrary chuck, selected out of said plurality of chucks accommodated in said cassette, on the basis of information related to a processing region on the substrate; and

a stage for holding the arbitrary chuck conveyed by said conveyance robot and for supporting the substrate with use of protrusions provided on the arbitrary chuck.

70. (Previously Added) A conveying system according to Claim 69, wherein the information related to the processing region includes positional information of an alignment mark.

71. (Previously Added) An exposure apparatus, comprising:
a conveying system as recited in Claim 69; and
exposure means for transferring, by exposure, a pattern of an original onto the substrate as supported with protrusion of an arbitrary chuck selected and conveyed.

72. (Currently Amended) A device manufacturing method, characterized by producing a device through manufacturing processes including a process for exposing a substrate by use of ~~a~~ an exposure apparatus as recited in Claim 71.

73-76. (Cancelled)

77. (New) A system according to Claim 15, wherein the position of the alignment mark or the position with respect to which the alignment mark is to be produced is placed outside a processing region of the substrate.